The American Center for Mobility

WILLOW RUN, YPSILANTI, MICHIGAN

The American Center for Mobility - Summary

- Connected and Automated Vehicle (CAV) technology, including connected Infrastructure, will revolutionize the transportation of people and goods in the next 5-10 years
- If implemented purposely, these technologies can simultaneously increase safety and mobility, and decrease energy use and emissions on a national scale
- Significant technical and policy challenges remain to be solved, including methods for safe testing, validation, and verification
- A combination of simulation, track testing, and on-road testing will be required to validate these systems sufficiently for safe, efficient, and effective deployment
- Collaboration of government, industry, and academia will be required to address these challenges and develop real-world products to maximize benefit for society
- University of Michigan has established a uniquely-successful PPP (MTC) and built a small-scale research, simulation, and education facility (Mcity, now in heavy demand)
- Numerous countries are acting to ensure their auto industries are at the forefront, and have built or are planning national-scale CAV testing facilities including Sweden, Korea, China, Japan, and likely others

The American Center for Mobility - Proposal

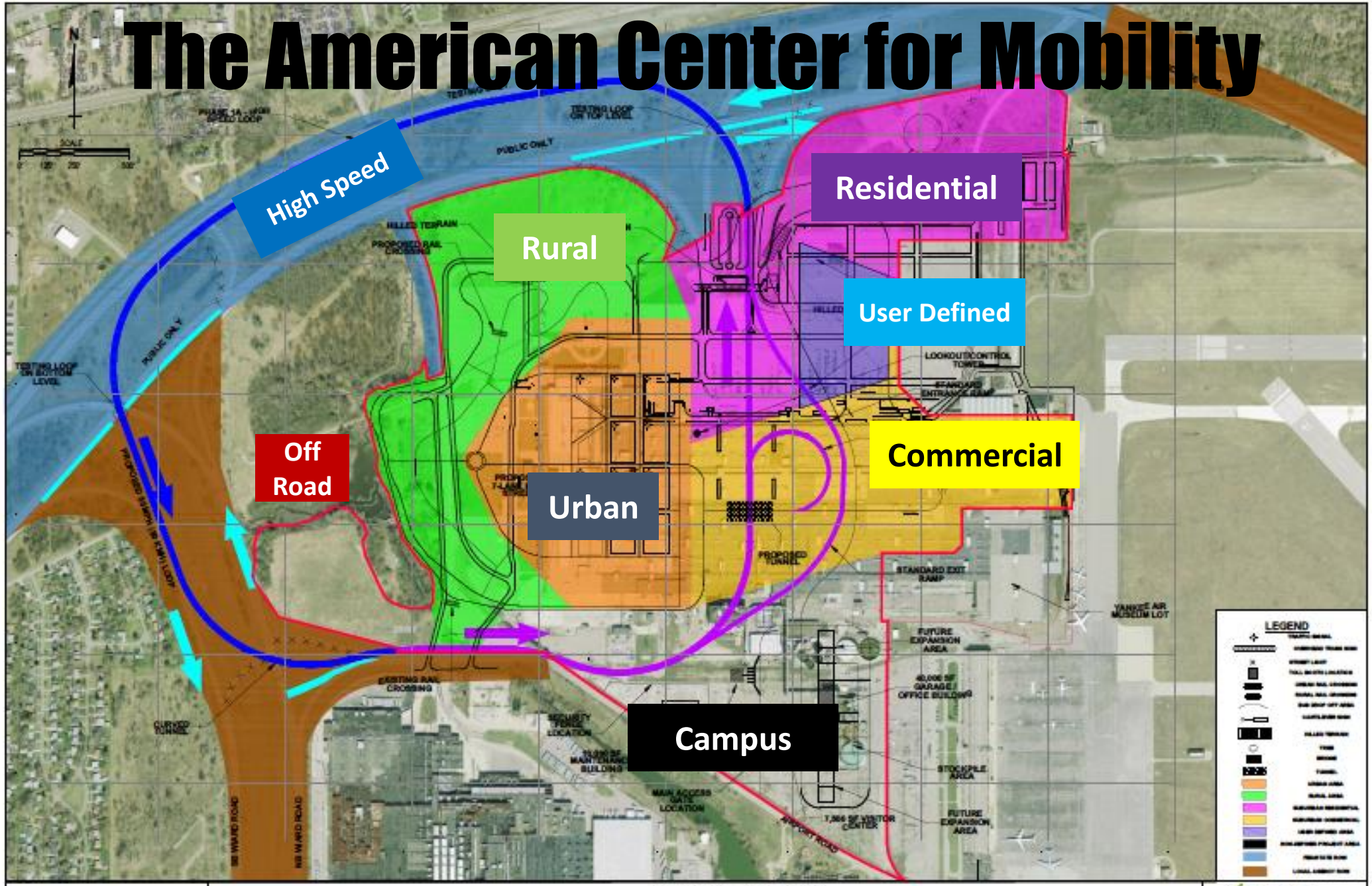
- Build a U.S. National CAV research, testing, product development, validation, and certification facility
  - At the Willow Run site in Ypsilanti, Michigan with 335+ acres
  - In very close proximity to most auto industry OEMs and suppliers, with significant weather variation
- Built with cost-shared Federal and State funds ($20M State/$60M Federal over 2 yrs)
- Operated by a self-sustaining non-profit, guided and governed by University of Michigan
- Expected heavy utilization by industry, as well as multiple government agencies, and academia ($20M over 3 years, mostly industry)
- Potential for co-location of federal laboratory space and facilities, though not required

Industry Research & Testing Needs

- **Accelerated development**, testing & verification of CAV technology
- **Validation and self-certification** of CAV technology
- Development, testing, & validation of **V2I and I2I** applications & standards
- Research, testing & **development of voluntary standards** for:
  - Crash avoidance & automation technology at high speeds and in urban environments
  - V2X communication, including infrastructure and hand-held devices
  - Automated operation on off-road, degraded, and unimproved surfaces
  - DSRC device communication protocol and interfaces
  - Cybersecurity measures and validation testing
  - Automated freight, trucking and transit of materials
  - Ground truth testing of automated vehicle safety technologies
  - In-use monitoring of vehicles/devices in the field

A Blank Slate…

The American Center for Mobility



Double Overpass

Double Overpass

Rural

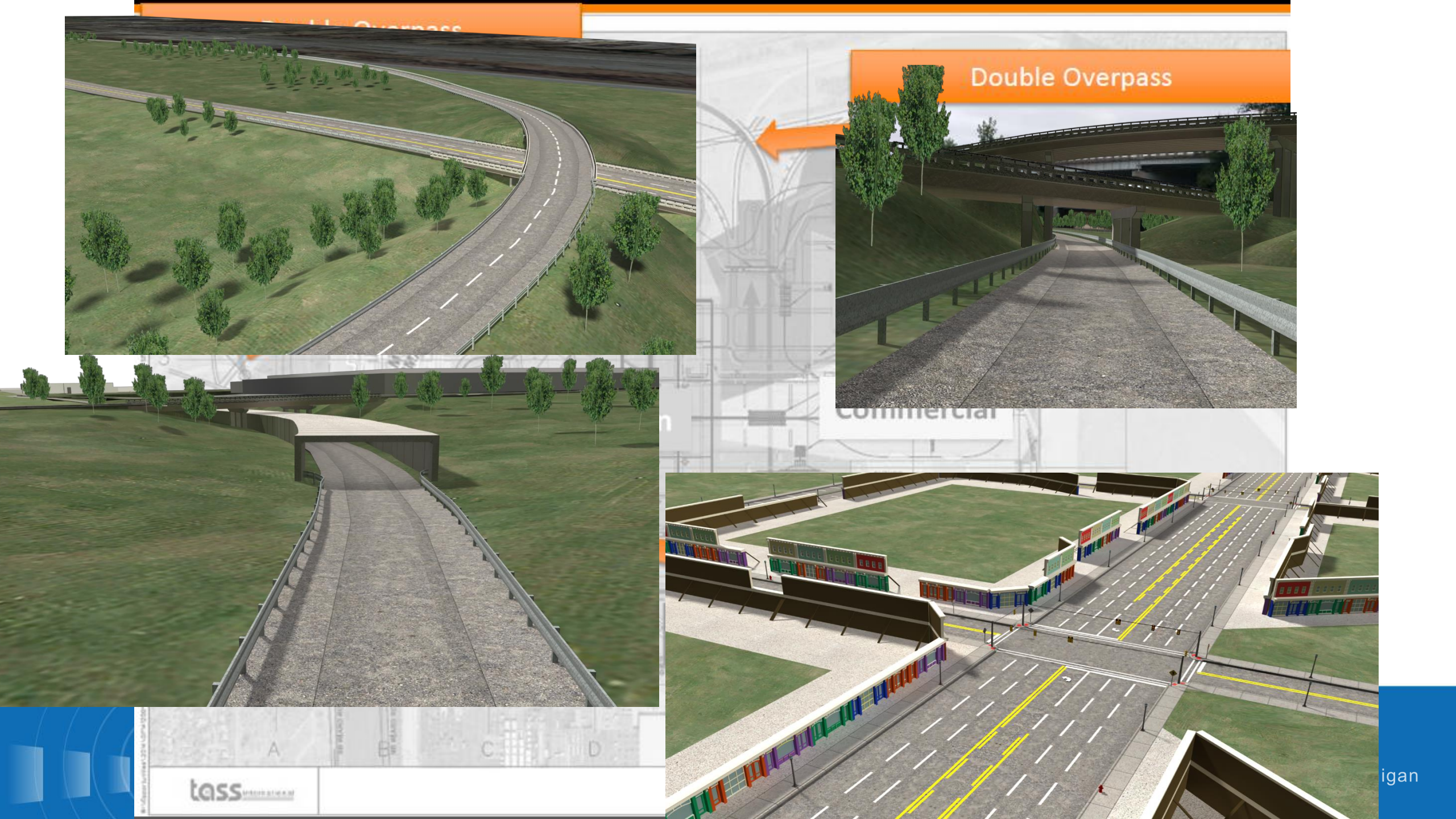
Urban

Commercial

Off Road

Railroad crossing

anti, Michigan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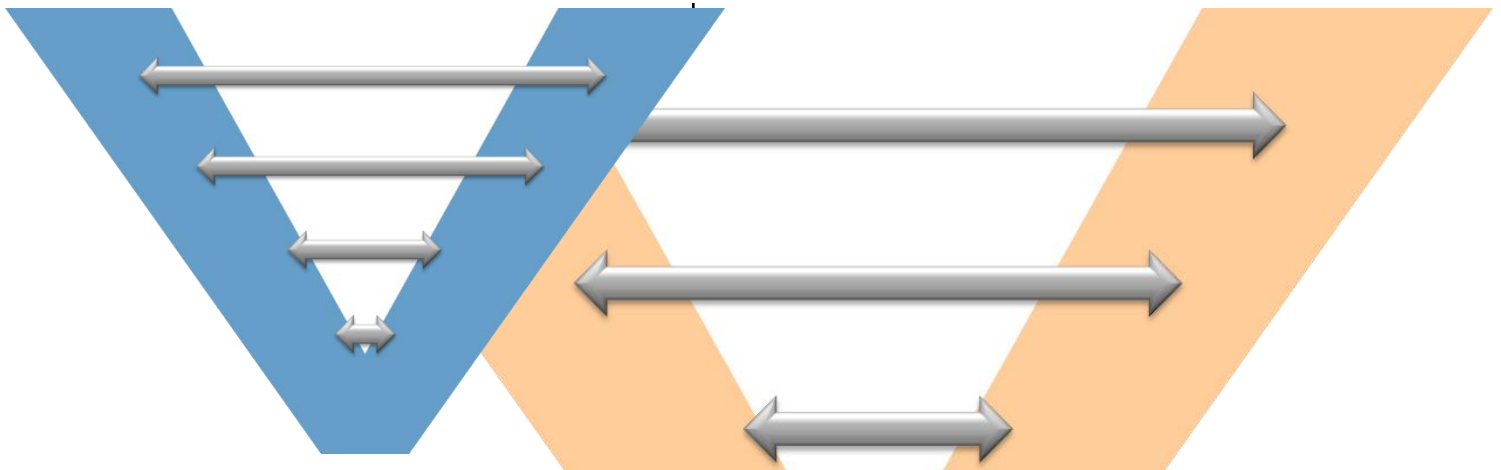

Mcity

Education, Research and Advanced Engineering (TRL 1-6)

Willow Run

Development, Validation and Certification Services (TRL 5-9)

**** TRL = Technology Readiness Level***

An Opportunity to Demonstrate American Leadership

- Numerous countries are investing in this emerging technology sector, but no country has yet established a firm leadership position.
- America has a unique opportunity to cement leadership by having the most diverse automotive and technology sectors and recognized reputation for innovation.
  - Which will attract further industrial investments
- The nation(s) that deploy these technologies most effectively will enjoy an inherent economic benefit over other nations, as it will minimize the cost of moving goods and people.
- Michigan is the most logical location to catalyze this work with the largest density of the automotive industry and highest concentration of engineers in the nation.
- There is also the opportunity to showcase the repurposing of an iconic American facility to productive use as a center of innovation in the greater Detroit Region.

Other “auto” countries are building facilities

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Other states are re-purposing facilities, or using public roads

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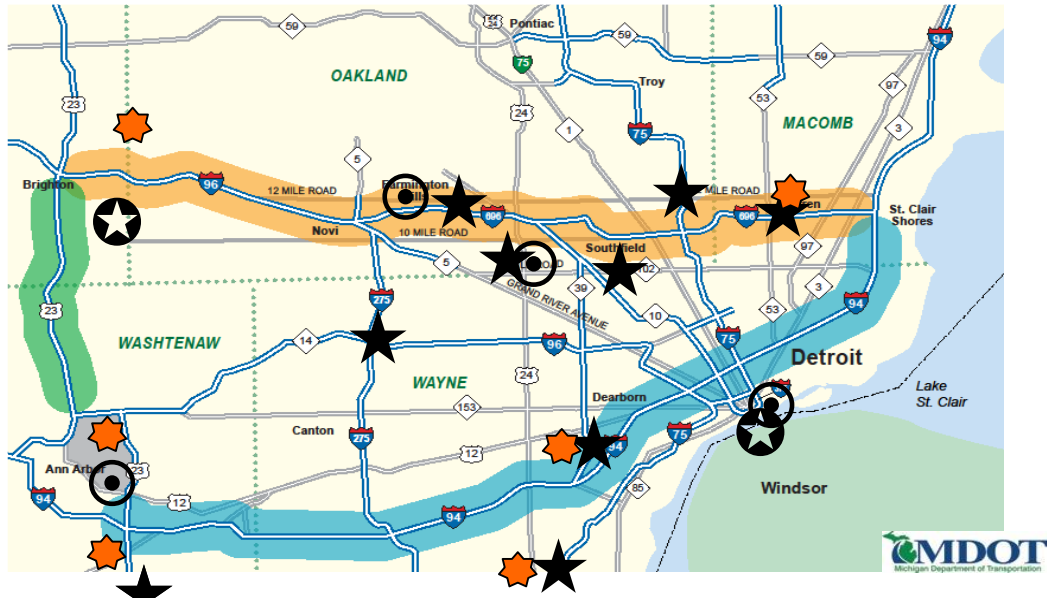
Why Michigan?

- Greatest concentration of the auto industry in the world
- Adjacent to university mobility initiatives
- Integrated with a forward-looking state DOT and government
- Unique site with both iconic and tangible qualities
  - Surrounded by connected infrastructure
  - Home of the Arsenal of Democracy
  - Co-located with commercial airport to facilitate travel
- More mobility-related assets than any other region



✪ MDOT Facilities ★ LC Member HQ or Key Facility

Building on Michigan's Mobility Assets

- Center or Advanced Automotive Technology (CAAT) - Macomb Community College
- Coleman A. Young International Airport
- Connected Vehicle Trade Association (CVTA)
- Detroit Innovation District
- Detroit Test Bed
- FCA US LLC Headquarters and Technology Center
- Ford Motor Co. Research and Innovation Center
- General Motors Co. Technical Center
- Hyundai America Technical Center Inc.
- I-94 Truck Parking Information and Management System (TPIMS)
- Joint Ground Robotics Enterprise – TACOM
- Lawrence Tech University - Autonomous and Interconnected Vehicles Lab
- Michigan Cybersecurity Range
- Michigan International Speedway Vehicle Testing Facility
- Michigan Tech Research Institute
- Michigan Tech Transportation Institute
- Monroe, MI PrePass
- NextEnergy
- Nissan Technical Center North America
- Oakland County Connected Car Task Force
- Roush Building (Google Driverless Cars)
- The Smart Corridor
- Southeast Michigan Connected Vehicle Test Bed
- Southeast Michigan Transportation Operations Center (SEMTOC)
- Toyota Technical Center
- U.S. Army Tank Automotive Research (TARDEC)
- University of Michigan's Mcity
- Volkswagen Group of America Inc.